Joint ANL/FNAL Chemistry Facility at Argonne

Project X Collaboration Review

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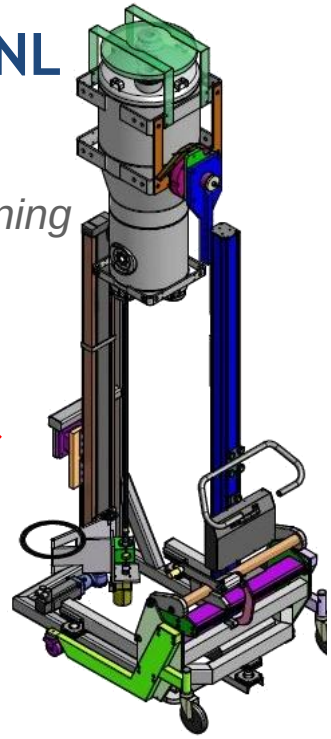
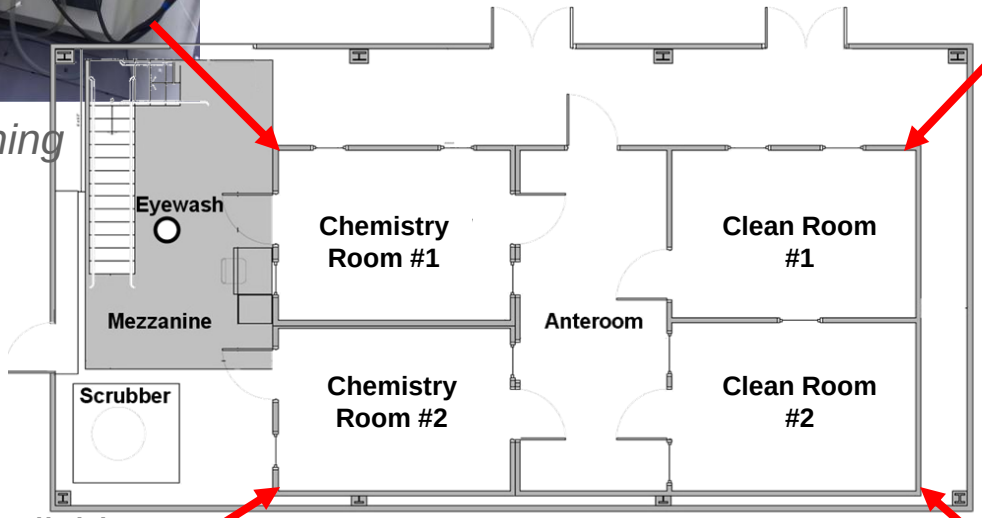
Cavity Processing and Cleaning at ANL

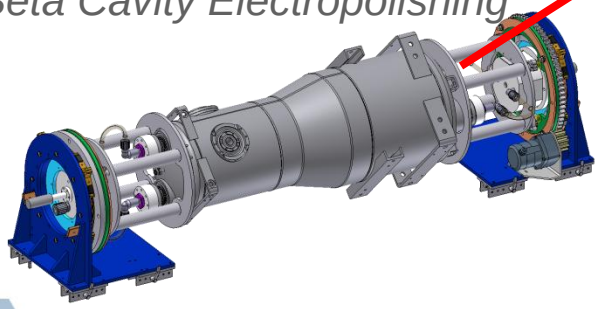
1.3 GHz Electropolishing

Low Beta Cavity Cleaning





Low Beta Cavity Electropolishing



1.3 GHz Cleaning

ANL/FNAL MOU on sharing of manpower and resources

Addendum # 1 to MOU between ANL and FNAL from 21 April 2006.
"Using the Superconducting Cavity Surface Processing Facility (SCSPF)"

I. Introduction

A facility for chemically processing and cleaning superconducting niobium RF cavities and for developing cleaning and processing techniques is being built in Room B101 of Building 208 at Argonne National Laboratory. The costs and effort for construction of this facility are being provided in approximately equal measure by Argonne National Laboratory (ANL) and Fermi National Accelerator Laboratory (FNAL). The purpose of this memorandum is to provide a framework for operating and maintaining the Surface Processing Facility and for ensuring that the costs and the benefits are shared equally between ANL and FNAL.

II. Description of the Facility

The facility is shown schematically in Figure 1. Two types of work area are provided: chemical work areas, and low-particulate clean rooms.

Chemical Rooms

Two chemical processing rooms are available for chemical polishing and electropolishing operations. Each room has two access doors, and both are ventilated with the exhaust passing through a single air-scrubber, which is shared by both rooms. The chemical room on the south side is configured and intended for use by FNAL personnel, and the chemical room on the north side by ANL personnel.

Framework for Cavity Processing and Cleaning in two separate rooms

New documents will be generated

Superconducting Surface Processing Facility (SCSPF) Document	
Title: SCSPF Safety Analysis	August 3, 2006
Authors: K. W. Shepard, M. P. Kelly	Version 1
Approved, SCSPF Manager:	
Approved, PHY Safety Coordinator:	
Additional Review:	

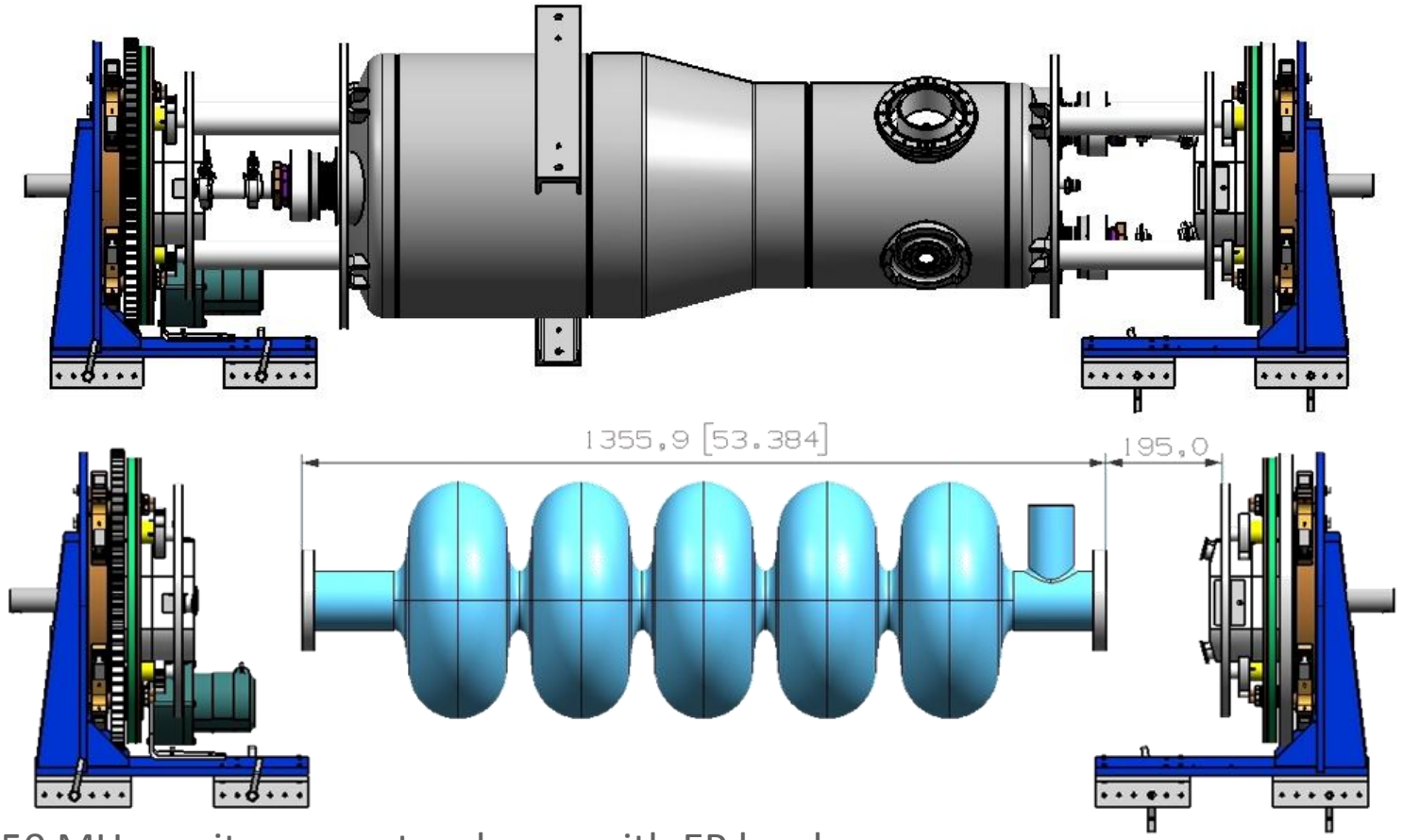
1. Introduction

This document describes safety issues for equipment and operations in the joint Argonne/Fermilab Superconducting Cavity Surface Processing Facility (SCSPF) located in Room B-101 of building 208. The body of this document provides a description of the facility and the work to be performed, and a general operating framework for both ANL and FNAL personnel. Detailed operating procedures, contained in attached appendices, are established, reviewed, and maintained separately for each of the two groups operating within the facility. This document supplements, but does not supersede, the information contained within the Physics Division Chemical Hygiene Plan.

2. Associated Documents

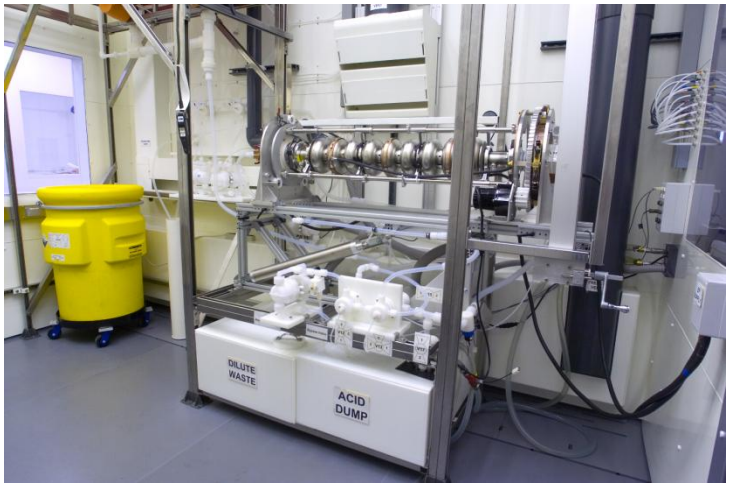
2.1. SCSPF Joint Memorandum of Understanding
2.2. SCSPF Emergency Procedures
2.3. SCSPF First Aid Treatment for HF Burns
2.4. SCSPF Training Course Description
2.5. SCSPF Procedure Description
Any chemical procedure which may require more than 4 liters of acid shall be described in a SCSPF Procedure document, which will specify in detail the equipment and apparatus used in the procedure and give a general description of the procedure. In general, procedures executed in the ANL and FNAL chemical rooms shall have separate and specific procedure documentation. All procedure documentation, including Procedure Checklists, shall be approved by the SCSPF manager and the ANL Physics Division Safety Coordinator.
2.6. SCSPF Procedure Checklist(s)
Any chemical procedure which may require more than 4 liters of acid shall have, in addition to a procedure description document, a procedure checklist to be used by the operators conducting the procedure. On completion of the procedure, the checklist shall be signed by the operator and immediately filed so as to be accessible to the SCSPF manager and/or the Physics Division Safety Coordinator.
2.7. SCSPF Hazard Analysis

Chemistry Room #2 EP at ANL

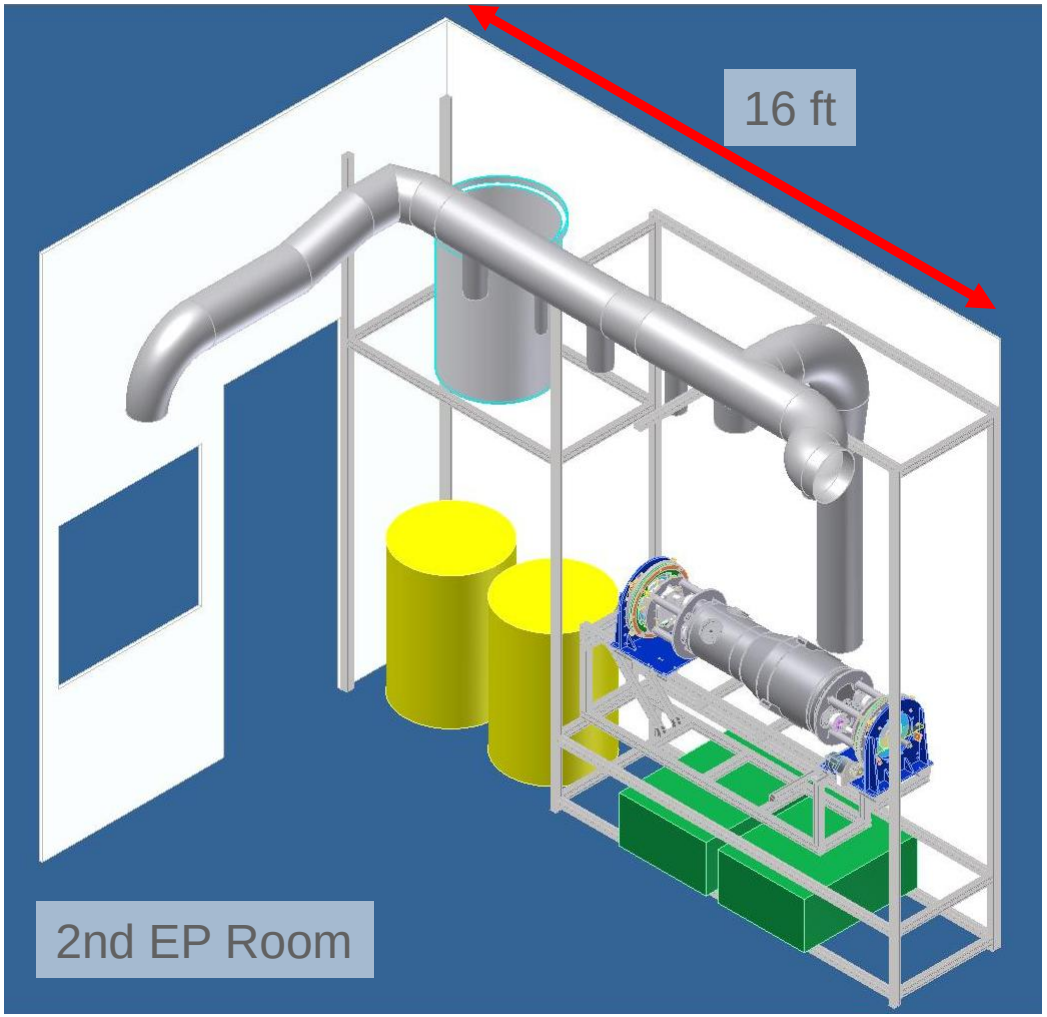


- 650 MHz cavity geometry shown with EP hardware
  - Cavity dimensions, weight consistent with EP hardware
  - 55 gallon acid handling limit: OK
  - 2 ½ times surface area, EP supply: OK, perhaps 50% larger chiller
  - Cavity handling similar to 9-cell (crane in hi-bay, hoist in chemistry room)
  - *No major difficulties in hardware to this geometry; will EP be as effective for this geometry?*

Layout for chemistry in 2nd room

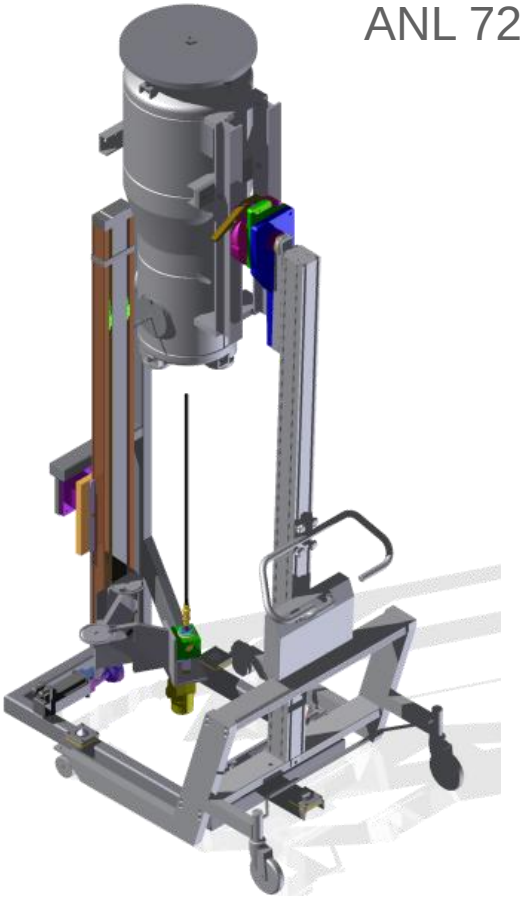


Existing EP Room

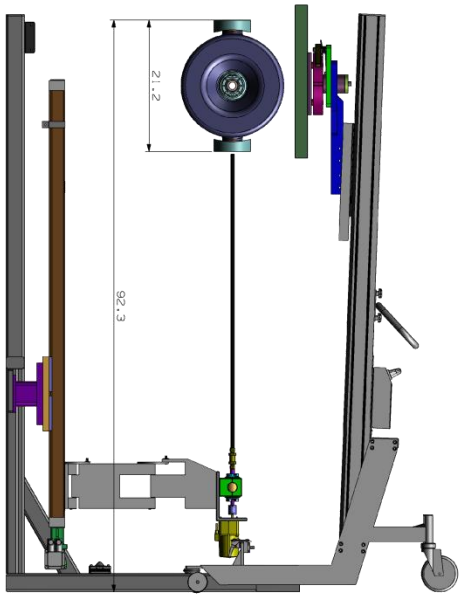


Possibility to perform HPR

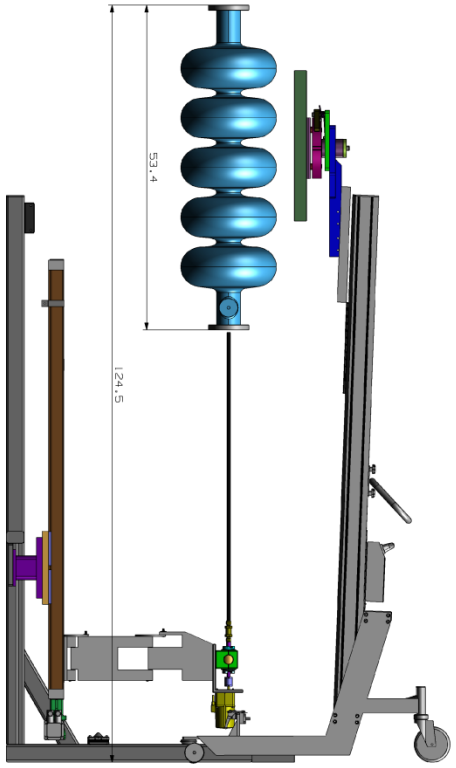
ANL 72 MHz Quarter-wave



325 MHz Spoke



650 MHz E-cell



Summary

- Planned ANL QWR chemistry complete Q3 FY11, so that…
- Chemistry for 650 MHz cavities can be available with modest additional engineering and fabrication
- High-pressure rinsing for all cavity types is possible in the ANL clean room (details TBD)
- Existing G150 chemical processing facility remains mostly available for (spoke cavity) BCP
- Several other ongoing or proposed SRF activities at Argonne, however; ANL would like to support any/all of these Project X activities

Additional details on clean activities, facility throughput by A. Rowe